CLAIMS

What is claimed is:

1. A pump for an inkjet printer applying a negative pressure to an inkjet head nozzle, comprising:

a tube connected to the inkjet head nozzle and being U-shaped;

a plurality of rollers which contact an inner arch of the tube and having a tapered shape; and

a rotor to which the plurality of rollers are rotatably mounted,

wherein, when the rotor rotates in a direction, at least one of the plurality of rollers rotate and squeeze the tube,

wherein, when the rotor stops rotating, the plurality of rollers return to a state in which the plurality of rollers do not squeeze the tube due to a recovering force of the tube, and

wherein the squeezing of the tube generates the negative pressure in the inkjet head nozzle.

2. The pump of claim 1, wherein the plurality of rollers are tapered.

3. The pump of claim 2, wherein the plurality of rollers are a pair of rollers disposed symmetrically to each other.

4. A pump for an inkjet printer applying a negative pressure to an inkjet head nozzle, comprising:

a fixing shaft;

a driving gear rotatably assembled to the fixing shaft;

a stopper protruding from a side of the driving gear;

a ratchet wheel rotatably assembled to the fixing shaft, having a driving ratchet formed in a lower end thereof and a cam recess;

a rotor assembled to the fixing shaft, movable in an axial direction, and having a driven ratchet formed in an upper end thereof which is engagable with the driving ratchet;

a plurality of rollers rotatably disposed at the rotor and having tapered sides; and

a tube disposed to contact the plurality of rollers and connected to the inkjet head nozzle,

wherein the driving gear is rotatable in a direction and rotation of the driving gear causes the rotor to move along the fixing shaft so that at least one of the plurality of rollers squeezes the tube.

5. The pump of claim 4, wherein, when the driving gear stops rotating or is rotated in the reverse direction, the rotor moves along the driving shaft in a reverse direction due to a recovering force of the tube to return the tube to an original state.

6. The pump of claim 4, wherein the plurality of rollers are a pair of rollers disposed symmetrically to each other.

7. The pump of claim 4, wherein the tube is disposed in a housing accommodating the rotor, the ratchet wheel and the driving gear.

8. The pump of claim 7, wherein the housing is provided with a rotor stopper protruding from an inner side thereof which encourages the plurality of rollers to maintain contact with the tube when the rotor is not rotating.

9. The pump of claim 4, wherein the driving ratchet and the driven ratchet are inclined and cooperate so that a load of the plurality of rollers applied to the tube by the driving ratchet when the ratchet wheel rotates in a reverse direction opposite the direction is smaller than the recovering force of the tube.

10. A pump which pumps ink from an ink source, comprising:

a shaft;

a driving gear surrounding the shaft and rotatable in a direction about the shaft;

a stopper integrally formed on a side of the driving gear and having at least one protrusion;

a ratchet rotatable about the shaft, movable about an axial direction, having one or more cam recesses formed on an upper side each of which receive a projection, and having a driving ratchet formed at a lower side;

a rotor rotatable about the fixing shaft, movable about an axial direction, and having a driven ratchet formed on an upper side; and

two or more rollers extending from a lower side of the rotor and which orbit the shaft when the rotor rotates.

11. The pump of claim 10, wherein, when the driving gear rotates in the direction, the projection is received by the one or more cam recesses and the ratchet wheel is moved axially by the projection so that the driving ratchet engages the driven ratchet,

wherein, when rotation of the projection continues after engagement of the ratchets, the ratchet wheel and the rotor move axially so that the plural rollers squeeze a tube.

wherein, when the projection continues to rotate after the plural rollers squeeze the tube, the ratchet wheel rotates in association with the projection and the rotor is rotated so that the plural rollers disposed at the rotor orbit the rotor, squeezing the tube.

12. The pump of claim 10, wherein the cam recess is inclined so that when a projection reaches a side of the cam recess, an inner diameter of the tube is completely compressed.

13. The pump of claim 10, wherein two rollers are both initially pressing the tube.

14. The pump of claim 10, wherein at least one roller is in contact with the tube.

15. The pump of claim 10, wherein, as the rotor rotates, the two or more rollers rotate and alternately squeeze the tube.

16. The pump of claim 10, wherein, when the driving gear stops rotating, the projection disengages from the cam wall, a recovering force of the tube pushes the rollers upwardly so as to axially move the rotor along the fixing shaft.

17. The pump of claim 10, wherein the two or more rollers are tapered.

18. The pump of claim 10, wherein the two or more rollers orbit the rotor when the rotor rotates.

19. The pump of claim 10, wherein the two or more rollers independently rotate with respect to the rotor.